CHAPTER I

LAND USE AND TRANSPORTATION

I. LAND USE AND TRANSPORTATION

A. ISSUES AND OVERVIEW

This Chapter considers the environmental aspects of land use and transportation, both separately and as they relate to each other from an environmental perspective. According to the Fairfax County Comprehensive Plan, "If current trends continue, the supply of land presently planned for residential development will be all but exhausted shortly after the turn of the century [2000]."[1] As we approach this "buildout," the focus of land use across the county is shifting from new development to revitalization and redevelopment. Each acre in the county becomes more valuable every day. The desire to maximize land utilization or productivity puts a strain on all types of land, from residential to commercial to parkland.

While the amount of available land has decreased, the Plan potential has been increasing. The potential is the number of units that can be built in the county according to the current Plan. It changes as requests are evaluated and adopted by the Board. Since 1989, there have been 80,585 new townhouses and multifamily units added and 927 single family homes removed from the Plan. This clearly demonstrates the increased intensity planned for the county.

At the same time, transportation systems across the county and metropolitan region are becoming increasingly congested. During rush hour, most highways in the county receive a failing grade for peak hour level of service. Over the past 15 years, highway construction in the Washington area outpaced population growth[2], yet congestion has still increased. This is due to increased per capita vehicle mileage that puts severe strains on the transportation infrastructure. The cost of congestion in the region is estimated at $667 per person in 2001, up from $320 in 1991.[3]

The same study estimates that, without the Metro system, each person would incur an additional 13.7 hours of congestion/year. Metro carries nearly 20% of all rush hour trips in the Metropolitan area, with a carrying capacity equivalent to 1,400 miles of roads, or roughly 11% of the road capacity.[4] The limiting factors to expanded Metro service are convenient access to Metro stations and train capacity. Currently, most Metro parking lots in Fairfax County are full by 8:00 A.M.

The buildout of our land use plan combined with the overload of our transportation infrastructure will continue to increase as the county population increases. Fairfax County is currently home to over one million people. It is projected to increase by another 15 percent between 2000 and 2010, and yet another five to seven percent

[1] Fairfax County Comprehensive Plan, 2003 Edition, Land Use Chapter
[2] "Where We are Growing", Southern Environmental Law Center, 2002
[3] Texas Transportation Initiative, 2003 Urban Mobility Study
[4] Washington Metropolitan Area Transit Authority, www.wmata.com/about/metromattersfactsheet.pdf

between 2010 and 2020. This growth will present a challenge to the Comprehensive Plan goals of maintaining an "attractive and pleasant quality of life."

As noted throughout this Annual Report, pressures from growth throughout the county directly effect our environment and consequently affect our quality of life, health, and natural experiences. The Comprehensive Plan specifically calls out strategies and patterns that can address land use and transportation together. Mixed-use development is an important tool to combine residential and commercial development to "enhance the sense of community" and to "increase transportation efficiency." It provides an opportunity for residents to live and work in the same area, thus reducing transportation needs while increasing the population density to support local businesses and mass transit.

The Board of Supervisors highlighted the effects of growth and congestion in its vision paper: **Environmental Excellence for Fairfax County, A 20-Year Vision**. A variety of tools were specifically called out, including mixed use development and Low Impact Development (LID). In addition, problems that at first seem tangential to the environment, such as neighborhood disruption through tear-down development and low income housing, were raised. Teardowns are becoming more common across the county, as single family homes are replaced with larger homes. The lack of low-income housing means workers cannot afford to live and work in Fairfax County and need to commute from outside the county, which exacerbates problems of both pollution and congestion.

The county faces great challenges from the combined effect of:

1. Land use constraints that result from reaching build-out and transitioning from a growth focus to redevelopment;

2. Transportation systems strained by congestion and getting further constrained by sprawl beyond the county; and

3. Population growth that will require additional residential and commercial facilities and transportation options.

By planning and learning from our past and from other communities, we can face these challenges and continue to have a high quality of life that includes a healthy environment with natural resources and experiences that are treasured by the county citizens.

1. Trends and Concepts

Important concepts that begin to combine land use and transportation are sprawl, smart growth, and new urbanism. Sprawl is the unrestricted growth out from the core of a city or a county. In the 1970s, Fairfax was one of the

nation's fastest growing counties. Today that rapid growth that is happening beyond Fairfax County, in Loudoun and Prince William Counties. As of 2003, Loudoun County was the fastest growing county in the nation, averaging 12.6% growth per year. This outer county sprawl directly affects Fairfax County through increased road congestion, changing property values, and inefficient use of Fairfax County's infrastructure.

Smart growth is the antithesis of sprawl; it can be defined as environmentally-sensitive land development with the goals of minimizing dependence on auto transportation, reducing air pollution, and making infrastructure investments more efficient. The Coalition for Smarter Growth lists the following principles for Smart Growth:

- Mix land uses;
- Take advantage of compact building design;
- Create housing opportunities and choices;
- Create walkable communities;
- Foster distinctive, attractive communities with a strong sense of place;
- Preserve open space, farmland, natural beauty, and critical environmental areas;
- Strengthen and direct development toward existing communities;
- Provide a variety of transportation choices;
- Make development decisions predictable, fair, and cost-effective; and
- Encourage community and stakeholder collaboration in development decisions.

Reston and the Orange Line corridor through Arlington are good examples of smart growth.

New Urbanism is a design movement that is going beyond smart growth into community building based on traditional urban centers. New Urbanists are working to improve land use by focusing on walkable communities and town centers.[5]

An important New Urbanist concept to encourage consistent planned development in a community is called **Form Based Codes**. These codes define an appropriate form of development and provide incentives for developers to adopt them. They have been successfully adopted as part of the Columbia Pike revitalization in Arlington County. The community worked through a series of **charrettes** with a planning consultant to create a vision for the new "pike." Form Based Codes provide clear direction on the adopted vision, while incentives encourage developers to adopt the form as the Pike is redeveloped. In particular, developers who follow the codes have an expedited review and approval process.

[5] Charter of the New Urbanism at: http://www.cnu.org/about/index.cfm.

Infill is the process of filling in larger lots with multiple or larger housing and is a key component to reducing urban sprawl.[6] Infill development can provide new housing or commercial development on vacant or underutilized sites within developed areas, taking advantage of existing infrastructure. While infill provides increased land utilization, it also has the potential to increase the environmental impact upon the infilled community. Particular concern should be paid to the impacts of infill, such as increased stormwater runoff due to additional impervious surface and loss of tree canopy.

Transit Oriented Development or Design (TOD) is another approach to creating walkable, livable communities. TOD encourages increased multi-use density around transit centers. The goal of TOD is to promote walking, biking, or transit as a means of getting to work or the store instead of by car. By focusing development around transit centers, ideally communities will have increased transit ridership, less traffic, reduced pollution, and a better quality of life.

Other concepts that combine land use and transportation provide less dramatic changes to traditional subdivision development. **Clustering** provides residential development that allows homes to be built close together with the remaining acreage left as open space in perpetuity. Generally, homes are sited on smaller lots, with the remaining land dedicated to open space. In most cases, the density of homes in a cluster development is the same as what would have been built on the entire site; the development is just configured differently. The challenge with clustering is the lack of public trust that the open space will remain open.

Low Impact Development (LID) is an approach that reduces the impact of development on a site. The goal of LID is to better integrate the natural environment with the built environment. LID techniques are intended to mimic an area's natural hydrology to manage stormwater on site, thereby reducing adverse downstream impacts.[7] For example, LID will reduce the amount of impervious surface on a site and reduce the amount of stormwater runoff leaving the site. LID tends to be relatively economical and is flexible enough to be applied to different types of landscapes.

Green Building is another approach to lowering the impact of development by designing structures to conserve resources and using technology that is more efficient. Green roofs can be built with succulent plant gardens that absorb water during rain storms and gradually release it back to dramatically reduce runoff and stream pollution. The county has installed one such roof at the Providence District office to demonstrate feasibility, and a very successful and attractive green roof has been installed at the Yorktowne Square

[6] Greenbelt Alliance, Smart Infill; Creating More Livable Communities in the Bay Area, at http://www.greenbelt.org/downloads/resources/report_smartinfill.pdf

[7] Low Impact Development Center at: http://www.lid-stormwater.net/intro/background.htm

Condominiums[8] in Merrifield. Highly efficient and solar energy systems also minimize the environmental impact.

High Occupancy Toll (HOT) Lanes are a tool to ease traffic congestion in urban areas. The idea behind HOT lanes is to open High Occupancy Vehicle (HOV) lanes up to single occupant vehicles that pay a toll. The price of the toll varies, depending on the time of day and amount of traffic. An additional benefit of HOT lanes is that they can provide additional revenue to pay for other transportation improvements.[9]

2. Macro Considerations

Many decisions in the county that affect land use and transportation are made on a micro level. That is, they affect a single parcel or neighborhood. The macro effect of many small changes has a great impact on the county environment. These macro consequences are lost in the day-to-day planning and construction that happens across the county. As higher densities and infill occur, their effect is cumulative and significant. For example:

1. Small neighborhoods with a stable environmental footprint are being transformed with larger houses. These newer houses bring additional impervious surface through larger roofs and additional pavement. They also displace trees that protect the parcel with a green canopy and provide haven for birds and wildlife. While the effect of a single home is small, the macro effect on community channels more runoff and pollution into the watershed, increases the ambient temperature, and displaces wildlife.

2. Large scale development, such as the Tysons Corner Urban Center and other Suburban Centers, bring additional residential density to a region. This induces disproportionate transportation needs that can lead to congestion and the associated increase in air pollution and vehicular waste. Tools and analysis such as **Transportation Demand Management (TDM)** are being used to plan and focus transportation needs across multimodal systems and to provide mixed use services in close proximity to the density. TDM is a key component to manage this macro effect.

a. Understanding Macro Changes

These macro effects are going to become more pronounced with the county build out and change from development to redevelopment. The infrastructure to sufficiently understand and model their effects is lacking across the county systems. Up to now, regional aggregations and averages

[8] http://www.fairfaxcounty.gov/nvswcd/newsletter/greenroof.htm
[9] U.S. Department of Transportation, Federal Highway Administration, A Guide for Hot Lane Development at http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_TE/13668.html

were sufficient to predict development impacts. The Concept Map for Future Development has done a good job guiding decisions and projecting impact at a broad macro level. Moving into the future, tools are necessary to provide a finer resolution of real time changes that can be quickly aggregated into a macro view.

These new tools should combine the county GIS capability with the existing planning and zoning databases. The data are readily available at a parcel level, but the ability to view the data and use the data to model macro effects is not possible. Understanding and modeling the macro changes happening across the county will help provide insight to the Board of Supervisors and Planning Commission as they deal with micro decisions.

b. Creative approaches

The county also needs to consider creative approaches to address these macro effects. One way to avoid macro consequences is to reduce the impact of micro decisions. For example:

1. Modifying the Public Facilities Ordinance to encourage Low Impact Development (LID) can protect streams and mitigate the micro impact of infill development.

2. Providing incentives for Green Building can protect streams and decrease heat generation from asphalt roofs. This encouragement will be a win-win for the county and for developers.

3. High density development should have an effective Transportation Demand Management plan. This should be part of any submission and include future monitoring with options in case the plan deviates from reality. The recent Plan Amendment for Fairlee/Metro West includes TDM as an important element of the development plan.

Planning for large scale redevelopment, such as county Urban and Suburban Centers, has been a useful forum to consider macro effects. These task forces grapple with all aspects of the Urban and Suburban centers, including land-use, transportation, and environmental impact. The residential commitment and input to these studies is commendable. They provide a long range vision and plan in harmony with the community vision. These studies and reports complement the Area Plans Review (APR) process that focuses on micro changes to the comprehensive plan.

The focus on **Transit Oriented Development**, especially at Metro stations and future stations along the Dulles Rail corridor and Tysons Corner, maximizes the county investment in multi-modal transportation. The Board of Supervisors-appointed Tysons Coordinating Committee has a very

ambitious charge to consider the redevelopment of the "Downtown" for Fairfax County. The county has a significant interest in getting Tysons right. Such a large project will demand better tools to envision, model, and explain the plan to citizens and business. It will require substantial community outreach and participation. It will need to be codified into a workable Comprehensive Plan amendment that encourages and monitors the vision. And it will require better macro management and mitigation of changes to this important region.

c. Non-obvious Macro Considerations

The sections above focus on changes caused by development and redevelopment. There are also macro effects generated by non-development changes, such as work patterns, mixed use opportunities, and economic considerations that effect the county environment.

Telecommuting, or **telework**, reduces or eliminates the traditional commute to the office. Teleworkers work from home or at local work centers that provide infrastructure for a community of workers. This reduces pressure on the transportation network without building physical infrastructure. The county has an aggressive Telework program in place for county employees.

Mixed use development brings work, play, and home closer together, reducing the distance for trips and commutes. Mixed use is proliferating across the county, providing economic growth with less congestion than traditional separated communities.

Economic factors, such as increasing property values, also affect the overall county environment. Low-income residents are struggling to find affordable housing near their jobs in the county and frequently choose to live outside the county. This negatively impacts the transportation system. As property values rise, homeowners choose to expand their residences rather then relocate, which changes the impervious nature of communities.

The Board of Supervisors has specifically raised affordable housing and infill development as an environmental concern in their Environmental Vision.

Macro considerations need to be better understood and modeled as the county increases in density. Traditional models did not need to consider macro changes, and the resolution and quality of data is insufficient for planning and protecting our environment. Dealing with the proliferation of small changes across the county will take creative approaches using all available tools, including the Comprehensive Plan, the Public Facilities Manual, special ordinances, and public outreach.

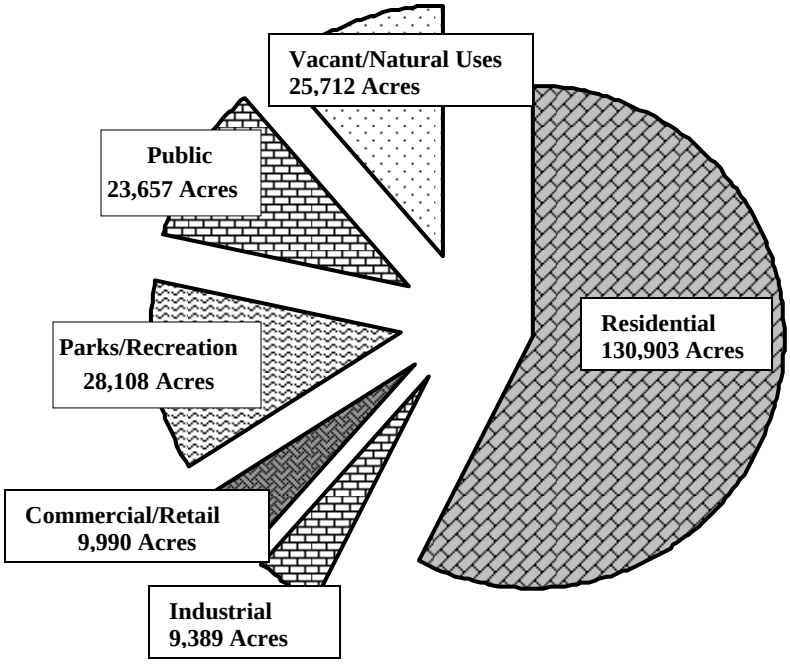
B. LAND USE

A prerequisite to understanding the interrelationship between land use and transportation is to first examine them separately. This section describes land use and land use decision-making in Fairfax County.

1. How Is Land Used In Fairfax County?

Land use in Fairfax County is analyzed yearly via the Urban Development Information System (UDIS). Fairfax County has 227,751 total acres of land, excluding areas in roads, water, or small areas of land unable to be zoned or developed. Those acres are organized into the following broad categories:

Figure I-1: Existing Land Uses in Fairfax County



Source: Fairfax County Department of Systems Management for Human Services, 2004.
Note: Land in Towns of Clifton, Herndon and Vienna included. Total acreage figures do not include areas in roads, water, or small areas of land unable to be zoned or developed.

- Residential—acres dedicated to living. Residential acres are measured by the number of dwelling units per acre (DU/AC). For example, a low-density neighborhood has a DU/AC from .1 to .5, a suburban neighborhood ranges from 1-20, and an urban center has a core DU/AC of 35-60.

- Commercial/Retail—acres developed for people to work or shop. Commercial space is measured by looking at the Floor Area Ratio (FAR), which is the ratio of gross floor area to the size of the lot. For

example, an FAR of 0.5 means that a single story building can cover half the lot, a two-story building can cover 1/4 of the lot, and a four-story building can cover 1/8 of the lot. FAR does not include other impervious surfaces, such as parking lots.

- Industrial—acres zoned for industrial use. Industrial space is measured by FAR.

- Parks and Recreation—acres dedicated to public enjoyment and recreation.

- Public—acres owned by the public but not for parks or recreation. This includes: Fort Belvoir; Dulles Airport; the campus of George Mason University; county government facilities such as fire stations, landfills, police stations, training facilities, schools, and government centers; and other publicly-owned properties.

- Vacant—acres currently unused, either natural or vacant, but zoned for Residential, Industrial, or Commercial uses.

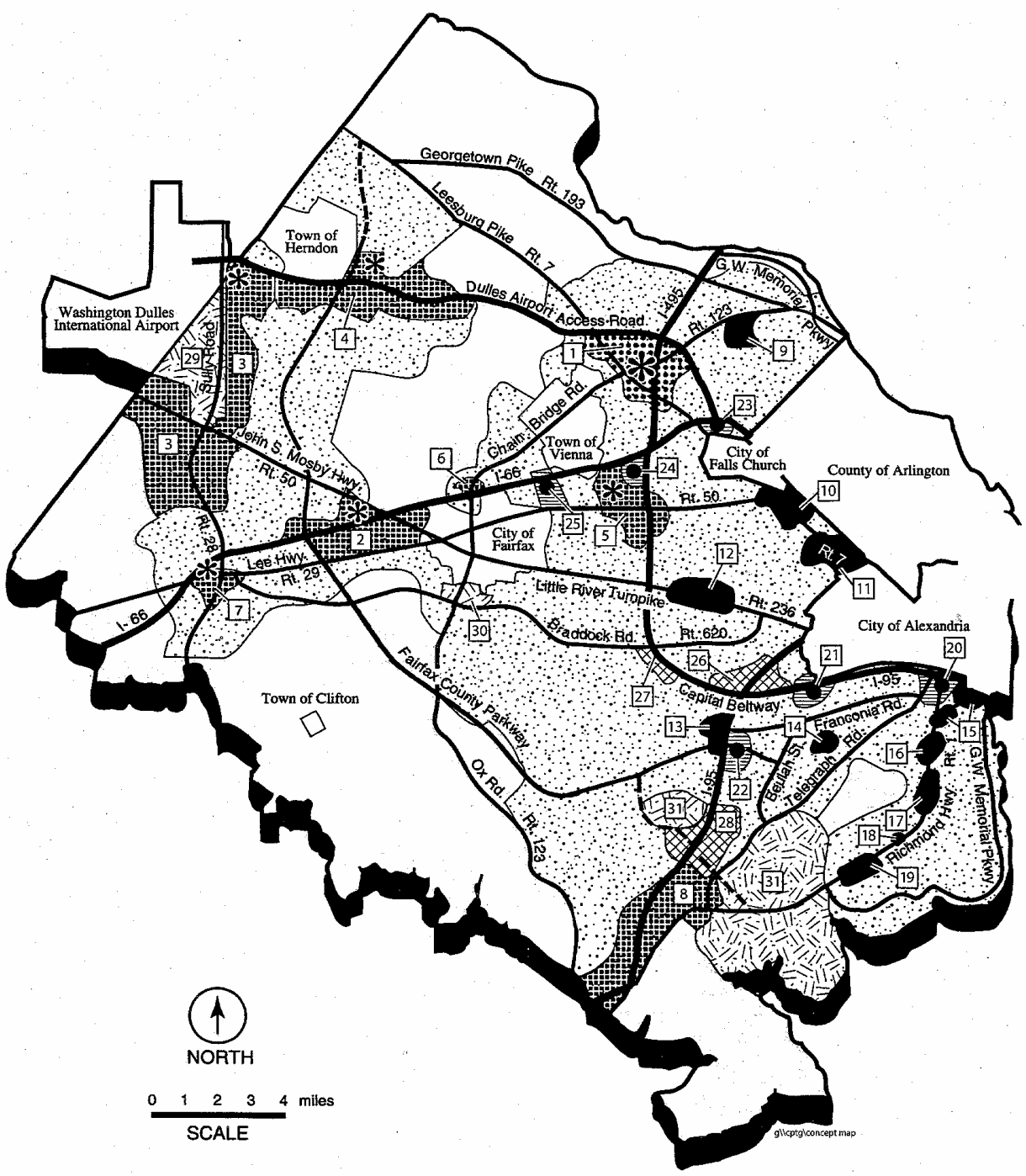
2. Land Use Planning

The Fairfax County Comprehensive Plan is a guide for making land use decisions in Fairfax County. The Plan was adopted in 1975 and revised in 1988 around 18 Goals for Fairfax County (a 19th goal was added later). The 2003 Edition consists of the Policy Plan plus the Area Plan for each of the four planning areas. The Policy Plan has ten functional sections plus a Chesapeake Bay Supplement. The functional sections are: Land Use, Transportation, Housing, Environment, Human Services, Public Facilities, Parks and Recreation, Revitalization, Economic Development, and Heritage Resources.

In 1990, the county's Concept Map for Future Development was developed. This map identified 31 mixed-use centers; the Concept Map has been revised slightly since then, but there are still 31 mixed-use centers shown (Figure 1-2). While the Concept Map was not formally adopted, it is an integral part of the Area Plans.

In 1995, a study of the Plan was prepared entitled: State of the Plan, An Evaluation of Comprehensive Plan Activities Between 1990-1995 with an Assessment of Impacts Through 2010. This study outlined a series of recommendations for the county to improve its ability to meet the Plan goals. Many of those recommendations are still applicable.

Figure I-2: Concept Map for Future Development



CONCEPT MAP FOR FUTURE DEVELOPMENT

CONCEPT MAP FOR FUTURE DEVELOPMENT

LOCATIONS OF MIXED-USE CENTERS

Urban Center
1. Tysons Corner Urban Center

Suburban Centers
2. Fairfax Center
3. Dulles (Route 28 Corridor)
4. Reston-Herndon
5. Merrifield
6. Flint Hill
7. Centreville
8. Lorton-South Route 1

Community Business Centers
9. McLean
10. Seven Corners
11. Baileys Crossroads
12. Annandale
13. Springfield (West)
14. Kingstowne
15. North Gateway and Penn Daw
16. Beacon/Groveton
17. Hybla Valley/Gum Springs
18. South County Center
19. Woodlawn

Transit Station Areas
20. Huntington Metro Station
21. Van Dorn Metro Station
22. Franconia/Springfield Metro Station
23. West Falls Church Metro Station
24. Dunn Loring Metro Station
25. Vienna Metro Station

LOCATIONS OF LARGE INSTITUTIONAL AND INDUSTRIAL AREAS

Industrial Areas
26. Beltway South
27. Ravensworth
28. I-95 Corridor

Large Institutional Land Areas
29. Washington Dulles International Airport
30. George Mason University
31. Fort Belvoir (Main Post and Engineer Proving Ground

LEGEND

- Suburban Neighborhoods (Residential density ranges defined in Area Plans; 0.15-0.25 FAR* for neighborhood-serving non-residential use)
- Low Density Residential Areas (Residential density of 0.1 to 0.5 du/ac **, specific density ranges in Area Plan; Non-residential use intensity 0.05 to 0.1 FAR)
- Tysons Corner Urban Center
  - Core (1.0-1.65 FAR; 35-60 du/ac)
  - Non-Core (0.25-1.0 FAR; 8-45 du/ac)
- Suburban Centers
  - Core (0.3-0.8 FAR; 15-35 du/ac)
  - Non-Core (0.15-0.30 FAR; 5-25 du/ac)
- Community Business Centers (0.20-0.50 FAR; 5-25 du/ac; if a core is designated, intensities of up to 0.70 FAR may be allowed)
- Transit Station Areas (0.30-1.00 FAR; 8-45 du/ac)
- Industrial Areas (0.25-0.50 FAR for Industrial Uses)
- Large Institutional Land Areas

* FAR - floor area ratio
** du/ac - dwelling units per acre

Currently, the Policy Plan is reviewed by functional sections. The Parks and Recreation section was reviewed in 2003. The Transportation Section is being reviewed in 2004 and 2005. A comprehensive review of the complete Policy Plan is not anticipated in the future due to the overall complexity of the complete document. The Area Plans are reviewed regularly. The North County Area Plans Reviews started in 2004. The South County Area Plans Review process started in 2005.

Another important ordinance that affects land use is the county's Chesapeake Bay Preservation Ordinance. Amendments to this Ordinance were adopted on November 18, 2003 by the Board of Supervisors. This Ordinance codifies the county commitment to protect the Chesapeake Bay. An important aspect is the designation of Resource Protection Areas (RPAs) around all water bodies with perennial flow. RPAs are the corridors of environmentally sensitive land that lie alongside or near the shorelines of streams, rivers, and other waterways. They include any land characterized by one or more of the following features:

(1) A tidal wetland;
(2) A tidal shore;
(3) A water body with perennial flow;
(4) A non-tidal wetland connected by surface flow and contiguous to a tidal wetland or water body with perennial flow; and
(5) A buffer area that includes any land within a major floodplain or any land within 100 feet of a feature listed in (1)-(4).

The Chesapeake Bay Supplement, which was incorporated into the Policy Plan in 2004, provides an excellent overview of land use factors in Fairfax County that affect the Chesapeake Bay.

The Comprehensive Plan plus the Chesapeake Bay Preservation Ordinance provide an outline for how and where development is planned to occur in Fairfax County. They can be used to analyze the **potential** development that can occur within the county. The **realization** of that potential is subject to many external variables.

3. Land Use Monitoring

Information on land use is primarily tracked using the Urban Development Information System (UDIS), which was developed in the 1970s. Background information on UDIS from the 1995 State of the Plan explains, "the Comprehensive Plan had detailed guidance for residential development, with a dozen residential density ranges, but lacked guidance for the appropriate intensities (FAR) for non residential development. Since the 1970s, UDIS has remained relatively unchanged with regard to Plan quantification capability. The Plan has, however, become increasingly complex, with intensity recommendations for most non residential areas."

Recommendations to improve UDIS from the 1995 State of the Plan have not been implemented, and it is still the basis of the county's land use information as presented in *Demographic Reports*. Technologically, UDIS has not kept pace with other county systems that have migrated off the mainframe. Feeder systems that provide data for UDIS are at risk of not being able to provide the correct type and format of data. The county is currently stabilizing UDIS and preparing to review the business requirements for a future upgrade. This is a critical tool for understanding how land is used, and additional capabilities to better categorize and understand the ground truth should be added. It is important that all of the stakeholders in the UDIS system are identified so that different business processes can be integrated. Additionally, a funding source needs to be identified in order for the process of upgrading the system to begin.

Moving forward, EQAC recommends that a parcel based system be developed using Geographical Information System (GIS) technology to replace UDIS. The benefit of such a system crosses beyond the environmental departments. Working with staff to understand the scope of this recommendation, we have identified work to occur in two areas – the integration and sharing of existing data and the creation of new systems to capture critical information not currently available in database form.

Integration and sharing of existing data

- Shared access and linkages to existing data created and maintained by business functions located in different county departments will need to be developed. These linkages should include the creation of a report module that allows users the ability to access and run certain types of reports.

- Current "owners" of parcel-related data at various stages of the parcel's "life cycle" will need to work cooperatively across business functions with other stakeholders to develop shared data definitions and documentation, and to ensure compatibility. As business functions change, compatibility of shared parcel information should be a primary focus of new and redesigned systems.

Creation of new data elements

- For critical parcel information not currently captured in existing databases, new databases should be developed that will integrate with the "life-cycle" application. The updating and maintenance of these new databases need to be integrated into the business processes of organizations functionally responsible for the processes to ensure that they reflect real time information.

- Data elements of particular interest to EQAC that currently are not fully captured in database formats include:

    - Planned land use and options;
    - Planned commercial and industrial intensity;
    - Existing and planned mixed-use types and intensity; and
    - Environmental data such as impervious surfaces, tree cover, streams, and stream channels.

Until a parcel life-cycle system can be deployed, parcel information needs to remain part of the business process of each business area and needs to be robustly maintained by that business area in order to maintain the continuity of critical information in the county.

4. Land Use History and Buildout Projections

The Comprehensive Plan contains land use recommendations for all of the land in the county. As a practical tool, however, it is most effective when there is significant vacant land to be developed. That vacant land has been steadily decreasing as shown in Table I-1:

Table I-1
Vacant Land in Fairfax County

Year	Vacant Land (acres)	Total Planned Land (acres)	% Vacant
1980	75,550	234,744	32.2%
1985	66,685	232,941	29.2%
1990	45,042	230,678	19.5%
1995	37,006	229,366	16.1%
2000	29,529	228,541	12.9%
2004	24,307	227,751	10.7%
Planned land does not generally include public roads and water			
Source: Fairfax County Demographic Reports, 2004			

In 1990, when the Concept Map was created, approximately 20% of the county was vacant. This gave some flexibility to the planners. In 2004, with only approximately 11% vacant and much of that fragmented, the decisions are much more constrained. Significant planning changes require interventions that will most likely affect existing developed land.

The current land use categories are shown in Table I-2 below.

Currently, 57.5% of the county land is developed for residential use, with 4.4% for commercial. These numbers show the footprint of each use type, but they

do not show the corresponding density. Commercial/Retail acreage in the county has a higher density than residential. It is difficult to determine the footprint of mixed-use acreage given the current data. It is also difficult to determine mixed-use density, and whether it is a function of DU/AC or FAR, or both.

Table I-2
Existing Land Uses

Land by existing use	Acreage	Percent of total
Residential	130,903	57.5%
Industrial	9,389	4.1%
Commercial	9,990	4.4%
Parks and Recreation	28,108	12.3%
Public	23,657	10.4%
Vacant & Natural	25,712	11.3%
Total	227,759*	100.0%
*Does not generally include public roads and water		
Source: Fairfax County Demographic Reports 2004		

As the current Plan is exercised and the county reaches build-out, the planned land use acreage is shown in Table I-3. All vacant and natural land will be developed or become parkland. The ratios between the types will change, with the residential increasing to 63% overall.

Table I-3
Planned Land Uses

Land Use	Planned Acreage	Percent of Total Land in the County	Vacant/Underutilized Land	Vacant Land as % of Planned Acreage
Residential	143,496	63.0%	22,505	15.7%
Industrial	8,290	3.6%	2,326	28.1%
Commercial	5,259	2.3%	710	13.5%
Public Facilities and Mixed Use	26,725	11.7%	1,356	5.1%
Parks, Recreation, Floodplains	43,852	19.3%	3,779	8.6%
Vacant and Natural	-	-		
TOTAL	227,622	100.0%	30,676	13.5%
Source: Fairfax County Demographic Reports, 2004				

The table also includes an estimate of the vacant or underutilized acreage within each type. "Because of the complexities involved in determining whether nonresidential land is underdeveloped, estimates of underdeveloped acreage are only made for residential land."[10]

5. Plan Density Increases

The aggregate acreage available in the county is relatively constant, with occasional changes as land is converted to other uses, such as roads and drainage ponds. The Comprehensive Plan capacity, however, is constantly increasing as new density is allocated across the county. For purposes of allowing for a comparison of existing and planned development levels, Table I-4 shows the "existing conditions" for both nonresidential and residential development as they existed in Fairfax County in the years 1990, 1994, and 2002.

Table I-4
Existing Land Uses in Fairfax County: 1990, 1994, and 2002

Land Use	1990	1994	2002
Nonresidential (figures given in square feet of floor space, rounded to the nearest million)			
Office	67,000,000	75, 000,000	98, 000,000
Retail	33, 000,000	39, 000,000	47, 000,000
Institutional	29, 000,000	31, 000,000	37, 000,000
Industrial	34, 000,000	36, 000,000	40, 000,000
Total Nonresidential	**163,000,000**	**182,000,000**	**221,000,000**
Residential (figures given in dwelling units, rounded to the nearest hundred)			
Single Family Detached	163,000	169,700	184,200
Single Family Attached (e.g., Townhouses)	67,300	74,600	90,500
Multifamily	72,100	77,700	96,000
Total Residential	**302,500**	**322,000**	**370,600**

Source: Fairfax County Department of Planning and Zoning, 2004

[10] Fairfax County Demographic Reports, 2004

Residential and nonresidential growth in Fairfax County is expected to continue, and the county's Comprehensive Plan anticipates and guides this growth. Table I-5 presents one potential Comprehensive Plan "buildout" scenario based on Comprehensive Plan options that would serve to maximize residential development (as opposed to options that would maximize nonresidential development) in mixed use employment centers. This scenario is presented applying Comprehensive Plan guidance as it existed in 1989, 1991, 1995, and 2003. Prior to the Area Plan revisions in 1991, nonresidential potential could not be quantified due to lack of specific nonresidential development intensity guidance in the Comprehensive Plan; as such, nonresidential Plan capacity information is not provided for the year 1989.

Table I-5
Comprehensive Plan "Buildout" Capacity in Fairfax County Applying a Residential Plan Option Maximization Scenario

Land Use	1989	1991	1995	2003
Nonresidential (figures given in square feet of floor space, rounded to the nearest million)				
Office	-	158,000,000	182, 000,000	185, 000,000
Retail	-	48, 000,000	56, 000,000	65, 000,000
Institutional	-	37, 000,000	42, 000,000	44, 000,000
Industrial	-	74, 000,000	75, 000,000	70, 000,000
Total Nonresidential	**-**	**317,000,000**	**355,000,000**	**364,000,000**
Residential (figures given in dwelling units, rounded to the nearest hundred)				
Single Family Detached	216,100	212,200	212,800	215,200
Single Family Attached (e.g., Townhouses)	78,600	82,700	86,200	88,900
Multifamily	83,200	114,400	140,600	153,500
Total Residential	**377,900**	**409,300**	**439,600**	**457,600**

Source: Fairfax County Department of Planning and Zoning, 2004

The Comprehensive Plan is not a static document; major revisions to the Area Plans were adopted in 1991, and the Plan has been amended numerous times, both through the Area Plans Review (APR) process and through Out-of-Turn Plan Amendments, since that time. As can be seen in Table I-5, the general effect of these Plan amendments has been to increase potential development in Fairfax County; the "buildout" levels of total residential and total nonresidential development under the scenario presented in Table I-5 have increased since 1991.

The increase in buildout planned residential development levels, under the scenario presented in Table I-5, is summarized in Table I-6:

Table I-6
Residential Development : Plan Build Out, 1989-2003

Land Use	1989 Plan	1991 Plan	1995 Plan	2003 Plan	1989 - 2003 Change	1989 - 2003 Percent Change
Single Family Detached	216,100	212,200	212,800	215,200	(900)	**-1%**
Single Family Attached	78,600	82,700	86,200	88,900	10,300	**13%**
Multifamily	83,200	114,400	140,600	153,500	70,300	**84%**
Total	**377,900**	**409,300**	**439,600**	**457,600**	**79,700**	**21%**

Table I-6 clearly shows that the residential units are:

1. Increasing in total number—as the population grows, Fairfax County is able to expand through Plan changes that increase the number of potential units; and

2. Getting closer—the trend is to add more multi-family units (an 84% increase since 1989) while maintaining a consistent number of single family detached homes.

C. TRANSPORTATION

This section examines transportation and transportation decision making in Fairfax County.

1. How do People and Things Move About Fairfax County?

There are numerous options for people and things to move about the county.

- Private, motorized transportation is one of the most significant elements of transportation that has a major effect on the environment and is most closely related to land use and development. In modern times, people have become more reliant on the use of automobiles for business, pleasure, and various daily functions and activities. The urban sprawl we have experienced in Fairfax County has greatly influenced this problem, causing major congestion on roadways, particularly during rush hour as many individuals are commuting long distances to and from their jobs.

- Rail and rapid bus transit has long been looked upon as a means of reducing traffic congestion and thereby creating a positive impact on pollution and air quality. It also has a direct relationship to land use planning and development because rail transport centers are ideal locations for business and housing developments. There are numerous projects that have long been in the planning phase; due primarily to budget constraints, however, virtually none of them have reached the actual development phase.

- Commercial vehicular transportation, mainly trucks and buses, are another serious factor impacting our environment. Trucks, whether they are local, inter-county, or interstate, are serious contributors to our environmental crisis. In addition to many of them using "dirty" diesel fuel, they also have a negative impact on traffic congestion. Bus traffic includes school buses, most of which are transporting students during rush hour periods. Many of these buses are old and are a hazard to the environment, again because of the type of fuel they use.

- Non-motorized transportation opportunities, namely walking and biking, have been looked upon as viable alternatives for reducing traffic congestion and improving air quality. Not having sufficient infrastructure for walking and biking is a major deterrent to that form of transport, not to mention the frame of mind of the general public that has become automobile-dependent over the years, even for short trips. This component has an important relationship to land use planning and development in order to ensure that adequate facilities (walking and biking trails) are included in the plans.

- "Virtual transportation" has surfaced in recent years as another viable alternative to motorized transportation. Modern technology has created opportunities for people to work out of their homes, using computers for telecommuting and e-commerce to perform their jobs. If these techniques become a more widely accepted means of performing one's job, it would have a significant positive impact on reducing pollution and improving air quality.

Fairfax County is a leader in this field with the Fairfax County Government Telework Program.

2. Vehicular Congestion and Volume to Capacity Ratio Maps

This section examines vehicular transportation options and the associated congestion that is experienced every day by drivers. Vehicle congestion on roadways is typically measured by volume to capacity (V/C) ratio. The Fairfax County Department of Transportation's Planning Division created a map for this report that shows the current and projected V/C ratios on major Fairfax

County roadways. As V/C increases from zero to one, the volume approaches the road capacity. Over one, there is more volume than the road can support. The Level of Service (LOS) is a measure of congestion; once V/C reaches one, the road is fully saturated, and the LOS is graded an F for failing.

Current V/C ratios on county highways are shown in Figure I-3. Major portions of the Beltway, I-66, and the Fairfax County Parkway already have a failing LOS.

Projected V/C ratios for 2025 are shown in Figure I-4. This information considers population growth and settlement projections. Comparing the current V/C ratio map with the future V/C ratio map provides many insights into how the transportation infrastructure grows with population. Some observations:

1. The failing highways are still failing, some much worse and others actually better:

    - I-66 West of the City of Fairfax will get increasingly more congested, while I-66 east of Fairfax will get less congested.

    - The Beltway will become considerably more congested, with V/C ratios ranging from 1.5 to over two. Congestion in the "mixing bowl" area (the I-95/I-395/I-495 interchange area) will continue to get worse. The impacts of the reconstructed mixing bowl are not yet factored into the model; however, interchanges are modeled separately from segments and the data may not reflect the current improvements.

    - I-95 outside the Beltway will get significantly worse, with V/C ratios increasing from 1.01-1.04 to 1.76 or greater.

2. Major roads closer to Washington D.C. will not change considerably over this period. This includes Route 29, Route 50, and Route 7 in and east of Tysons Corner. The current congestion has stabilized and increased volumes are not expected on these roads.

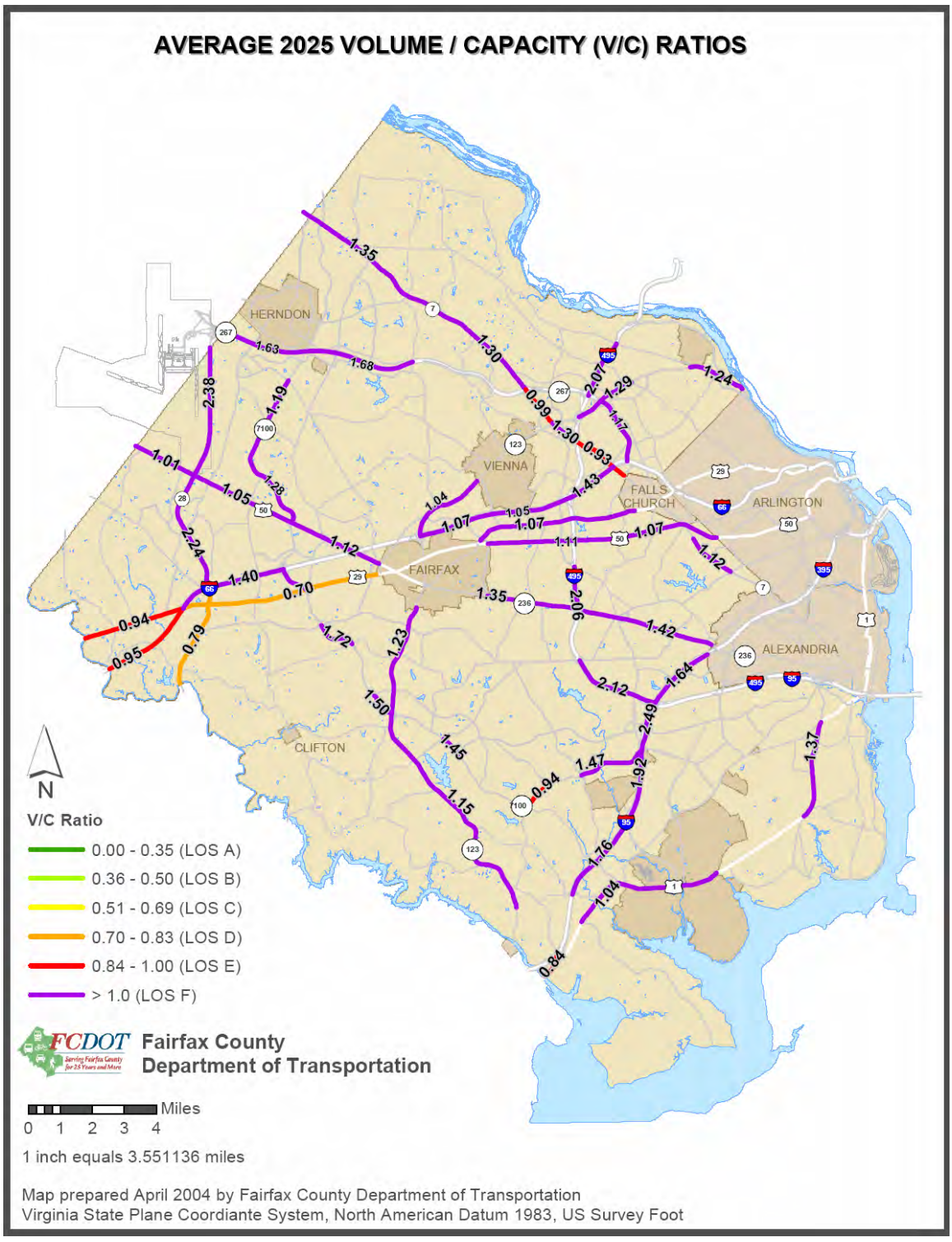
3. Major roads in the western part of the county will get more congested; this includes portions of Routes 28, 123, and 7 west of Reston. This will primarily be induced by commuters from outside the county.

The maps do not include potential improvements from mass transit. In particular, the Dulles Rail extension will impact congestion in the Tysons Corner area, and an Orange Line extension to Centreville will impact congestion along I-66 throughout the county. The maps also do not show changes from the proposed HOT lanes on the Beltway.

Figure I-3:

Source: Fairfax County Department of Transportation

Figure I-4:


AVERAGE 2025 VOLUME / CAPACITY (V/C) RATIOS
HERNDON
VIENNA
FALLS CHURCH
ARLINGTON
FAIRFAX
CLIFTON
ALEXANDRIA
N
V/C Ratio
0.00 - 0.35 (LOS A)
0.36 - 0.50 (LOS B)
0.51 - 0.69 (LOS C)
0.70 - 0.83 (LOS D)
0.84 - 1.00 (LOS E)
> 1.0 (LOS F)
FCDOT
Fairfax County
Department of Transportation
Miles
0 1 2 3 4
1 inch equals 3.551136 miles
Map prepared April 2004 by Fairfax County Department of Transportation
Virginia State Plane Coordiante System, North American Datum 1983, US Survey Foot

Both of these improvements have a dynamic component and are more difficult to model accurately. One of the recommendations of this Chapter is to continue studies to better model the effect of transit on congestion and other dynamic aspects of a modern transit system. These improvements are being considered as part of the Transportation Section review of the Comprehensive Plan that is currently under way; the improvements need to be implemented to provide the Board with better data to make future transportation decisions.

Frequently the focus of transportation congestion is on big projects, such as the mixing bowl or HOT lanes. This needs to be balanced with regular maintenance of the existing infrastructure. An important policy identified by the Coalition for Smarter Growth is "fix-it-first" to ensure that all state maintenance needs are met and to direct funding to fixing problems on existing roads and transit prior to funding new construction.[11] As infill becomes the primary mode of development, the existing infrastructure will demand more resources to accommodate denser developments.

3. Residential Commuting

An interesting statistic on commuter patterns is that over 50% of the residents in Fairfax County work in Fairfax County (see Table I-7), with another 17% working in the District of Columbia. Similarly, most of the workers in Fairfax County live in Fairfax County (see Table I-8); however over 80,000 workers commute to jobs in Fairfax County from Prince William and Loudon Counties. Only 12,000 workers commute to the county from the District of Columbia.

Table I-7
Where do Residents of Fairfax County Go to Work?

Destination	Number of Commuters from Fairfax County	Percent of Total Commuters from Fairfax County
Fairfax Co, VA	278,064	52.72%
District of Columbia	88,908	16.86%
Arlington Co, VA	48,670	9.23%
Alexandria City VA	27,641	5.24%
Montgomery Co, MD	16,943	3.21%
Loudoun Co, VA	16,420	3.11%
Fairfax City, VA	15,741	2.98%
Prince George's Co, MD	9,594	1.82%
Prince William Co, VA	7,013	1.33%
Falls Church City, VA	4,061	0.77%
Source: U.S. Census Bureau, Commuting Patterns of Fairfax County, Virginia Residents, 2000[12]		

[11] http://www.smartergrowth.net/vision/regions/region.html
[12] http://www.fairfaxcounty.gov/comm/demogrph/publist.htm

Table I-8 Where to Workers in Fairfax County Come From?	
Origin	**Number of Commuters**
Fairfax Co, VA	278,064
Prince William Co, VA	44,322
Loudoun Co, VA	35,933
Montgomery Co, MD	22,148
Arlington Co, VA	20,476
Prince George's Co, MD	18,258
Alexandria City, VA	14,643
District of Columbia	12,244
Stafford Co, VA	7,249
Fauquier Co, VA	5,499
Manassas City, VA	5,145
Source: U.S. Census Bureau, Commuting Patterns of Fairfax County, Virginia Residents, 2000	

4. Transportation Options

Just as the Land Use plan has increased capacity in the same footprint through higher density, the transportation plan needs to accommodate more commuters through denser transportation options. Metro is a good example of denser transportation in a smaller footprint.

As a simple example of the space required for vehicular traffic, consider the Fairfax County Parkway. The 35 miles of paved roadway consume roughly:

35 miles * 5,280 ft/mile * 4 lanes * 14 ft/lane = 10,348,800 ft^2 = 237 acres

This does not count medians or access roads. For comparison, the Pentagon covers 29 acres, or 1/10th the total paved surface of the Parkway. A similar Metro right of way is a much thinner with a higher peak capacity. As the county continues to grow, a multi-modal network that continues to increase density and maximize existing infrastructure is needed.

One successful multi-modal option that is already making a difference is the Burke Virginia Railway Express (VRE) subscription bus route. This is a subscription service that picks up commuters and gets them to the VRE station. The key to such a service is that it makes connections and is consistent.

Additional options that use creativity and provide effective multi-modal options are needed across the county. Combining multi-size buses, pedestrian options, and public outreach into a systematic plan will be needed to keep the county moving.

5. Transportation Decision Making

Management of transportation to maximize its usefulness and minimize its adverse impact on the environment is made very difficult because of the complex interrelationships of federal, state, regional, sub-regional, and local entities that are all involved in Fairfax County transportation planning and funding. Local initiative in addressing transportation needs is further limited because the State of Virginia owns and maintains every public road in the county. Even subdivision cul-de-sacs are State roads.

The complexity of solving transportation problems in Fairfax County and mitigating the adverse environmental impact of inadequate or less than optimum projects can be better visualized by reading the Northern Virginia Transit Funding Resource Guide issued by the Northern Virginia Transportation Commission. This Resource Guide describes the many sources of funds that are available for transit projects and lists over 50 federal and 30 state and local funding programs. However, with governments at all levels being faced with a severely reduced capability to fund projects, they cannot provide funding levels to qualify for matching grants of funds from many of these sources.

A variety of funds are available from the federal government, but they all come with strings attached. Federal regulations, standards, and guidance must be met before consideration will be given as to whether federal share contributions will be made available toward transportation needs.

In Virginia, the Commonwealth Transportation Board (CTB) has final approval authority over the six-year transportation program for the entire State. Under guidance of the CTB, the Virginia Department of Transportation (VDOT) is responsible for building, maintaining, and operating the State's roads, bridges, and tunnels.

For Fairfax County, the transportation goals are included in, and promulgated through, the Fairfax County Comprehensive Plan. Those projects that are to be funded by county resources are included in the county's Capital Improvement Program. However, transportation projects that are to be funded through State and Federal funding are included in the VDOT six-year transportation program.

The Northern Virginia Transportation Coordinating Council has developed a Northern Virginia 2020 Transportation Plan, which is a comprehensive study identifying a multi-modal transportation solution to provide safe, efficient and economical choices for travel and transport of goods. The Plan has become part of the broader planning effort of the Transportation Planning Board of the Metropolitan Washington Council of Governments (TPB of COG). Specific projects will be submitted by the Commonwealth of Virginia for inclusion in Washington region's financially Constrained Long Range Plan (CLRP) as funding streams open up.

A further description of the interplay of planning and funding of projects between agencies in the Metropolitan Washington area can be found in A Citizens Guide to Transportation Decision-Making in the Metropolitan Region, which is available from the TPB of COG.

An example of a coordinated project is the Pike Transit Initiative, which is a 12-month study effort sponsored by the Washington Metropolitan Area Transit Authority (WMATA). The study will analyze alternatives for a new high-capacity and environmentally friendly transit service along Columbia Pike from the Pentagon/Pentagon City area to Baileys Crossroads. Working closely with local jurisdictions, neighborhoods, and community groups, the study team will develop a preferred transit investment (e.g., light rail, streetcar, or bus rapid transit) for the corridor that will support the county's redevelopment initiatives.

6. Programs, Projects, and Analyses

a. Walking and Biking Facilities

There are many potential environmental improvements that can be brought about by providing greater opportunities for non-motorized means to commute, travel, or obtain recreation. They include: reducing air pollution caused by traffic congestion; reducing water pollution caused by roadway and parking lot construction made necessary by traffic demands; reducing noise pollution caused by on-road vehicles; and reducing energy consumption required to operate motorized vehicles.

Improved non-motorized transit access by connecting hike/bike paths to the Metro stations and bus stops was one of the major considerations for the 2002 update of Fairfax County's Countywide Trails Plan. The Non-Motorized Transportation (Trails) Committee (NMTC) continues to improve the trail connections to transit facilities by working with Metro (WMATA), the Virginia Department of Transportation (VDOT), and the county's Department of Transportation (FCDOT), and will review and provide comments during the Dulles Corridor rapid transit stations access planning process. In addition, the FCDOT is conducting a study to inventory and improve bus stop access and safety. The county's Pedestrian Program Manager should review and comment on Metro station studies and the related rezoning and special exception applications to improve the pedestrian access and safety to those facilities. Convenient and safe pedestrian access will encourage more people to use transit facilities, therefore reducing vehicular usage and related pollution in the environment.

In the past, the Board of Supervisors has provided funding to the NMTC by magisterial district for trail projects. Such funding has been limited due to budget reductions. However, in 2004, county voters approved a $165 million General Obligation Bond Referendum as part of the Board's four-

year Transportation Plan. Within the Plan, $10.8 million was designated to fund countywide pedestrian improvements such as sidewalks and trails, and improvements for bus stops and crosswalks, as well as pedestrian improvements for the Richmond Highway Initiative.

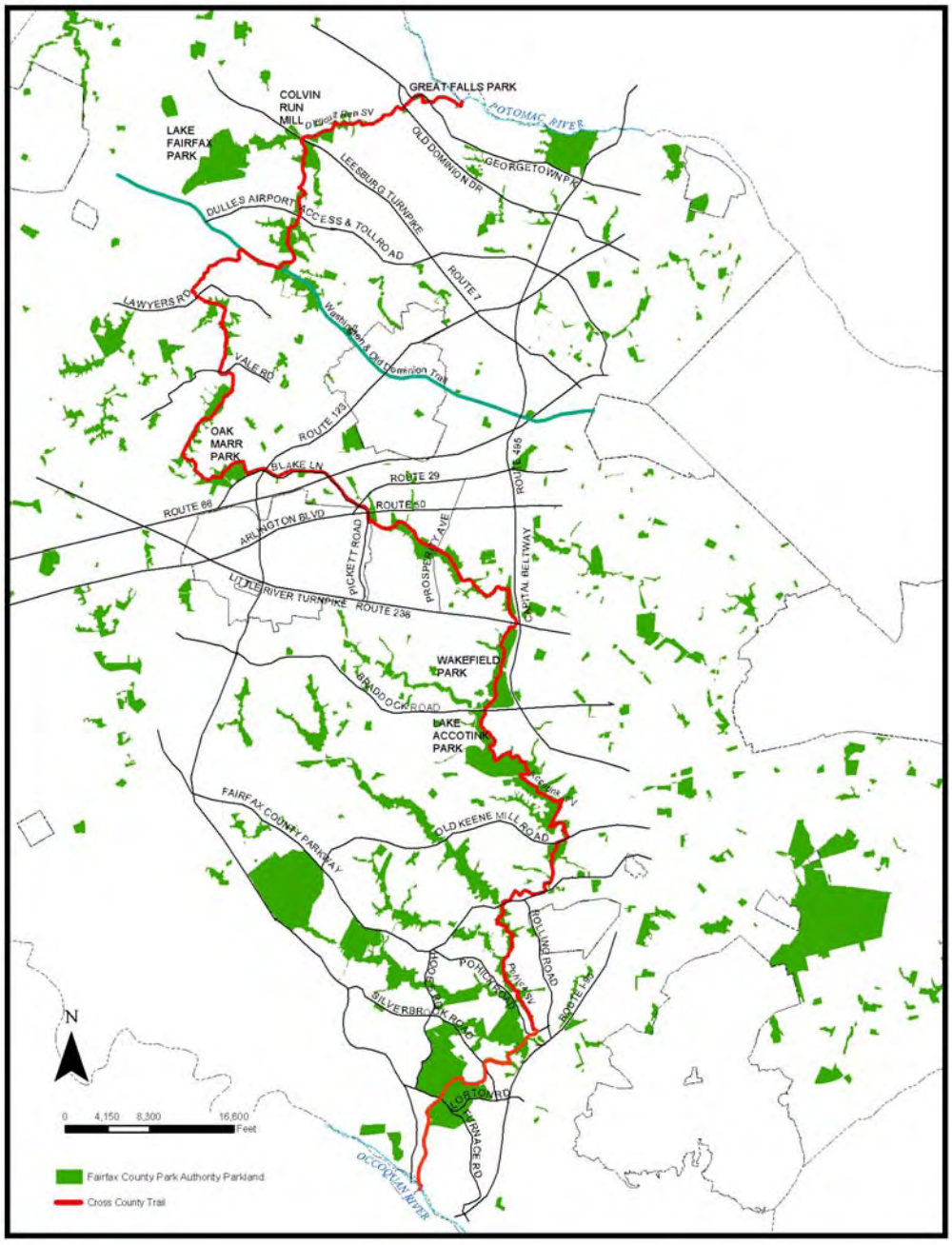
Also, the Board appropriated an additional $2.5 million in general funds as part of the FY 2005 budget for streetlight, drainage, sidewalk, trail, and walkway projects. Of this amount, $676,000 was earmarked for sidewalk and trail construction. As there are still numerous missing links along the major commuting and recreational trails in the county, both the NMTC and the Pedestrian Task Force are currently developing a list of priority projects needed to achieve a comprehensive interconnected trails system throughout the county. The Pedestrian Task Force expects to complete a 10-year capital plan for pedestrian facilities in 2005.

The Countywide Trails Plan added on-road bike routes as a new category of trails. These trails are proposed along routes suitable for commuting, and for travel to places for recreational purposes. It is expected that the planned on-road bike routes will be installed with future highway improvements according to the Trails Plan. Currently, there are on-road bike lanes located on Dranesville Road and sections of Beulah Road and Telegraph Road.

The Countywide Trails Plan is developed to provide the general locations of the proposed trails. It does not provide details such as intersection design or mid-block crossing of the street. Those details are examined during the site plan or subdivision plan review process. The site reviewer may need additional training to better detect more of the needs for safe crossing, or seek advice from the county's Pedestrian Program Manager.

The dream of a multi-use trail crossing Fairfax County from the Occoquan River near Route 123 to the Potomac River at Great Falls is becoming a reality. The Cross-County Trail (CCT) will ultimately be 34 miles long and is 95% complete (Figure I-5). Only a few stream crossings are missing, mostly in the northern part of the county. The commuting routes are complete except for the section between King Arthur Road and Route 236 in Fairfax. Work will be started on the Laurel Hill extension with much work to be completed during FY 2006. The connections to the Washington & Old Dominion trail – a great regional transportation and recreation trail – and to the Vienna Metro Access trail at the City of Fairfax, will provide vital links to transportation systems across the region. A link is also provided to the Franconia-Springfield Metrorail station. Other connections, such as to the Fairfax County Parkway trail, the Reston trail system, and various roadside trails will allow trail users to reach work, shopping, recreation, and school destinations without resorting to the automobile. With rising gasoline prices, more residents will likely be turning to bicycle and other alternative modes of transportation in the future.

Figure I-5: Cross-County Trail



Source: Fairfax County Park Authority

b. Employer Services Program

Fairfax County has a teleworking option for the county staff. An even more significant application of teleworking or telecommunication is part of the county's Employer Services Program. The Fairfax County Employer Services Program (ESP) was established in 1997; its basic purpose is to work with employers to provide alternative means of commuting to their places of employment. These alternatives include Metro/rail, bus services, carpooling, vanpooling, telecommuting, bicycling, and walking. ESP provides various services to employers to enable them to implement any of the above-mentioned alternatives.

The increased publicity on teleworking has resulted in an increase in the number of teleworkers, from 138 in December 2001 to over 825 today. The county is well beyond the three-quarters mark towards its goal of 1,000 teleworkers (a number that is based on the Council of Government's goal of 20% of the regions' eligible workforce teleworking by 2005). When Fairfax County reaches that goal, it is estimated that county teleworkers will save 59,000 commuting hours and 1.8 million commuting miles in a year.

In February 2004, Fairfax County Board Chairman Gerald Connolly, the Metropolitan Washington Council of Governments, and the Greater Washington Board of Trade announced a new effort to encourage 50,000 more commuters to telework by 2005. This program, which is aimed at large employers and federal agencies, includes customized training programs and free trials at telework centers and marks the first time that public and private organizations in the metro area have come together to promote teleworking.

In October 2004, a very successful Washington Area Conference on Telework (WACOT) Senior Executive's Forum was held in Tysons Corner. Participants, including Chairman Gerald Connolly, Board of Trade President Bob Peck, Bill Lecos from the Fairfax County Chamber of Commerce, Delegate Jim Scott, representatives from COG, and corporations in Fairfax County and the region kicked off a major effort to enlist the private sector in the project to meet the region's telework goal.

Fairfax County government, through its Employer Services Program, assists businesses and employees to find transportation solutions, including telework programs. During 2004, Employer Services Program staff conducted a number of employer site outreach visits throughout the county. A description of the Employer Service Program can be found on the county's Web site at: http://www.fairfaxcounty.gov/fcdot/Employer.htm.

The support from the Board of Supervisors and the County Executive, plus the marketing and training campaign and technology enhancements, are

working. Increased interest in telework is evident in the number of employees who participate in training sessions, ask for information via email and phone, and sign up for telework. There are now teleworkers in departments that previously had none. Managers have expressed an interest in telework as a way to continue business operations during inclement weather or emergencies. The county's active partnership in regional efforts to expand telework keeps it current on best practices and identifies the county as a resource for other businesses on teleworking.

D. THE INTERRELATIONSHIP BETWEEN LAND USE AND TRANSPORTATION

The above sections presented "Land Use" and "Transportation" as separate environmental issues. The focus of this section is on the interrelationship between land use and transportation. Throughout this chapter, three fundamental observations about Fairfax County have been examined. They are:

1. The county is rapidly approaching build-out and is transitioning from a growth focus to redevelopment;

2. The county transportation systems are strained by congestion and getting further constrained by sprawl beyond the county; and

3. The county will continue to grow in population and prosperity. It needs to provide residential, commercial, and transportation options for more people.

As the concept plan becomes realized, the transportation infrastructure must be in place to accommodate those new living and working populations. With the county reaching build-out, the transportation options are constrained. Dense options, such as Metro and HOV, are enablers of future growth. Alternatives and choices, such as mixed use development, transit oriented development, telecommuting, and flex-work, reduce the amount of transportation that is required.

Combining the land use projections with transportation planning is essential for the county to continue to grow and prosper. By considering the land use and transportation facets of future decisions together, the county can continue to maintain a high quality of life. Conversely, when land use or transportation decisions are made in isolation, they will exacerbate the problems of build-out and congestion and negatively impact quality of life.

The county has already started along this path with the designation of Urban, Suburban, and Transit centers. The Board of Supervisors has adopted Comprehensive Plan guidance for several such areas based on the recommendations of Board-appointed task forces. The comprehensive results of these efforts have been impressive, and EQAC anticipates similar results from ongoing and future task

force efforts. Equally important are policy changes that encourage more comprehensive planning, such as Transportation Demand Management.

1. Programs, Projects, and Analyses

This section outlines projects that have combined elements of land use and transportation via special studies or revitalization districts that incorporate mixed use and transit oriented development.

The establishment of Urban Centers, Suburban Centers, and Transit Station Areas (as shown in the Concept Map for Future Development) in critical locations in the county is a fundamental prerequisite to achieving many of those objectives. Significant effort is now focused on the Tyson's Corner Urban Center, where plans call for four additional Metro stations. By preparing and planning for future development, the county is making progress towards integrating land use and transportation.

a. Tysons Corner Urban Center

Over the last several decades, Tysons Corner has evolved from a rural crossroads into a substantial suburban business center. The Comprehensive Plan recognizes Tysons Corner as the only area in Fairfax County that is classified as an Urban Center. The Comprehensive Plan envisions a Tysons Corner Urban Center that contains a mixture of high density office, retail, and residential uses and parks (including urban parks and active recreation facilities) in a pedestrian-oriented urban environment.

As envisioned in the Comprehensive Plan, the highest development intensities and the most "urban" areas of Tysons Corner will be located within walking distance of future rail stations. Under the Comprehensive Plan, locating rapid rail transit stations in Tysons Corner will allow increased intensity for non-residential and residential development for areas in proximity to each station.

In order to provide a comprehensive plan for Tysons Corner, the Board of Supervisors established the Tyson's Corner Coordinating Committee in May, 2005. The Joint Board Matter that established the committee clearly identified growth, land use, and transportation as the focus of the committee:

> *Tysons Corner is the economic engine driving Fairfax County to and through the 21st Century, and the conditions established by this Comprehensive Plan update* ***must*** *continue to foster the economic vitality of our urban center. The continued commercial success of Tysons plays a major role in providing enough revenue to allow the Board to keep providing tax relief to homeowners. The residents of Fairfax County cannot afford an economic decline in Tysons Corner,*

and this must be foremost in our thoughts. In addition, Tysons needs a better mix of residential and commercial development in order to mitigate traffic congestion. Tysons must also remain a center for retail activity.

Mission: With this goal in mind, the mission of the Tysons Coordinating Committee is to update the 1994 Plan to:

1. Promote more mixed use;
2. Better facilitate transit-oriented development (TOD);
3. Enhance pedestrian connections throughout Tysons;
4. Increase the residential component of the density mix;
5. Improve the functionality of Tysons, and;
6. Provide for amenities and aesthetics in Tysons, such as public spaces, public art, parks, etc.

Scope: The scope of the Committee's charge is to:

1. Focus on transit nodes;
2. Folding the APR nominations into this process;
3. Ensure that transportation impacts are addressed;
4. Help define the future of Tysons

The committee will continue for 15 months, with significant community outreach and public involvement. EQAC is represented on the committee and will advocate for strong environmental protections within and around Tysons Corner.

b. Dulles Corridor Rapid Transit Project

Rail service has been envisioned in the Dulles Corridor since construction of Washington Dulles International Airport in the late 1950s, when the right-of-way for future rail was reserved in the median of the Dulles Airport Access Road. The Fairfax County Comprehensive Plan integrates land use and transportation planning for the area from Tysons Corner to Dulles Airport based on the expectation that rail service through Tysons Corner to Dulles Airport will be constructed. It is critical that the Dulles Rail project be funded and constructed if those plans are to be realized.

The Draft Environmental Impact Statement (EIS) for the Dulles Corridor Rapid Transit Project includes an option to commit to rail service in the corridor without interim steps, including bus service in lieu of rail. The Draft EIS also includes options for serving Tysons Corner with rail, while the bus rapid transit options would bypass Tysons Corner. It is essential that, if the land use and transportation objectives for this critical corridor are to be realized, rail service must be provided and Tysons Corner, as the

designated urban center of Fairfax County, must be served by that rail service. While it is important to implement rail service in the corridor, it is also important that issues that were overlooked or not fully evaluated in the Draft EIS be considered and resolved in a manner consistent with the goals and objectives of the Comprehensive Plan. The issues that need further evaluation and consideration include: (a) the noise that will be generated from rail service, especially at elevated tracks, as well as from the additional vehicular traffic that will be generated along the corridor; (b) the increased need for feeder bus service centering on the transit stations; (c) the impact on surrounding neighborhoods of increased densities that can be granted in the vicinity of rail stations; (d) the increased traffic, and its impact, from development generated by the availability of rail service; and (e) adequate provision for pedestrian access to transit stations.

c. Suburban Centers

The county has designated seven areas as Suburban centers. These contain a complementary mixture of office, retail, residential uses and parks (including Urban Parks and active recreation facilities) in a cohesive, moderate intensity setting. The Reston and Merrifield Suburban centers are presented as representative of the comprehensive approach at each area.

Reston Suburban Center: The purpose of the plan for the Reston Suburban Center area is to encourage a more urban and transit-oriented development pattern. The objective is to create, at each Transit Station Area, a pedestrian-oriented core area consisting of mixed-use development that includes support services while maintaining transitional areas at the edges of the Transit Station Area.

Options for development in the Transit Station Areas allow higher intensities based upon compliance with specified conditions. Those options are designed to be site specific.

The Merrifield Suburban Center: On June 11, 2001, the Board of Supervisors adopted an amendment to the Comprehensive Plan that created the Merrifield Suburban Center. The area is served by the Dunn Loring – Merrifield Metro station and has regional and local access from I-66, I-495, Route 29, Route 50, and Gallows Road. As set forth in the Comprehensive Plan, the vision for the Merrifield Suburban Center includes two core areas: one focuses on development near the transit station and the second is planned to evolve into a town center. A new "Main Street" would connect the two core areas. The interrelationship of transportation and land use is evident in the Comprehensive Plan for this Suburban Center, particularly in the following planning objectives for the Suburban Center:

(a) Encourage revitalization and redevelopment of portions of the Merrifield Suburban Center to create more attractive and functionally efficient commercial and residential areas with pedestrian-friendly and transit-oriented environments.

(b) Encourage mixed-use development that includes pedestrian and auto circulation systems that integrate the development both internally and externally, resulting in transit-oriented and pedestrian-friendly environments.

(c) Encourage the development of additional housing (including affordable dwelling units) in the Merrifield Suburban Center so that employees may live near their workplace and transit services, in order to reduce the number and length of commuter auto trips.

(d) Develop a cohesive roadway system that provides a more extensive grid of streets to serve the town center, Transit Station Area, and the area between.

(e) Develop a cohesive pedestrian circulation system linked to open spaces such as plazas, courtyards, greenways, and parkland in order to facilitate walking and reduce reliance on private automobiles.

(f) Develop mass transit options, transportation strategies and planned highway improvements to mitigate traffic impacts in the Merrifield Suburban Center and in adjacent residential neighborhoods.

d. Transit Station Areas

The county contains six Metro transit stations with four more slated for Tysons Corner and additional stations stretching through Dulles Airport along the Orange Line. These Metro stations are evolving into the transportation hubs for the county. Redevelopment can be seen at each Metro station. At both the Vienna and Dunn Loring-Merrifield Metro stations, WMATA is in the process of selling land adjacent to the stations to be transformed into transit oriented developments. These transit oriented projects provide the density for future growth with a smaller per-person traffic demand than single family housing that is typical in the county.

Some of the important lessons from the Fairlee development proposed adjacent to the Vienna Metro include:

- Metro Capacity—the Metro system needs to expand to support new riders at these denser developments. Consideration is needed for both additional Metro cars and bottlenecks in the system, such as the Rosslyn tunnel.

- Replacement of Metro Parking—as redevelopment occurs at the transit stations, existing commuters need to be accommodated.

- School Capacity—as density increases, public facilities and schools need to be enhanced and expanded to support new residents.

- Transportation – Transportation Demand Management needs to be in place to verify transportation projections are in line with the development reality and mitigation plans need to be approved in advance. The Fairlee project highlighted the need for better TDM across the county.

- Environmental Issues—include protecting our environment and providing environmental or natural space for residents. Environmental protection includes stormwater management as well as preserving air quality, managing waste, recycling, and "green" building to minimize energy consumption. Environmental opportunity means that additional open space needs to be preserved for a denser human population.

- Mix of Uses—the mix of uses should help to create a synergy of uses resulting in an opportunity for both current and new residents to walk to shopping and other services in their neighborhood.

- Protection of Stable Neighborhoods— any increased density should be focused and constrained in a core area of the Metro station platform. The purpose of focusing density is twofold: first, TOD studies show that the highest percentage of transit ridership is generated by development within ¼ mile of the platform and that transit ridership drops off past the quarter mile. Secondly, the protection of stable neighborhoods requires that higher density be constrained and that density does not creep beyond clear, logical boundaries.

These lessons were specifically identified in the Fairlee Comprehensive Plan motion with specific language written into the Plan amendment to address them. As other transit stations are developed, similar consideration will be required.

e. Summary

With the advent of build-out and the continued growth within the County, new development will be much more complicated then the initial development within the county. There will be changes imposed on existing citizens and businesses and impacts that are both real and perceived. Integrated land use and transportation planning is essential to maintain our quality of life into the future.

From an environmental perspective, the initial development of the county created a baseline that currently exists. As redevelopment occurs, be it at higher density or simply expanding existing development, the county goal should be to maintain or improve the existing baseline. There is no need for any further environmental degradation.

By continuing to integrate land use and transportation planning, the County can change and grow without sacrificing our quality of life.

E. RECOMMENDATIONS

1. Land Use and Transportation Vision and Assessment

The current Fairfax County Comprehensive Plan traces its roots back to the PLUS program that culminated in 1975 and the "Goals for Fairfax County" adopted in 1988. Numerous reviews and regular updates have occurred over the past 30 years, yet as stated in the current Plan: "Many of the key components of the 1975 Plan remain in the revised Plan, such as the emphasis on focusing growth in "Centers"; decreasing automobile dependency; and protecting environmentally sensitive areas and stable neighborhoods. What has changed are some of the means to achieve these ends."

As the county approaches build out, EQAC recommends that the county:

a. Evaluate the State of the Plan and publish an updated version of the State of The Plan, An Evaluation of Comprehensive Plan Activities between 1990-1995 with an Assessment of Impacts through 2010 (published in 1996) to cover plan activities between 1995-2005 and assess impacts through 2025. The current process of reviewing each section does not provide a comprehensive review of the interrelationships between sections, especially Land Use and Transportation, and does not review the underlying principles of the Plan.

b. Assess the state of the county with respect to the PLUS Principles set forth in 1975 and the reality 30 years later. The PLUS Principles and planning approach were designed to achieve the following:

- To increase local employment (in a period when Fairfax County was still primarily a bedroom suburb on the fringe of the urban core);
- To decrease reliance on the private automobile by reducing the length of work trips and making mass transit facilities more easily accessible;
- To reduce pressure for development in environmentally sensitive areas;
- To preserve stable neighborhoods; and
- To lower costs by more efficient provision of public services.

The Comprehensive Plan provides guidance to balance these competing goals. This assessment will help clarify the historical lessons learned and identify areas that have proven successful at a macro level across the county and where it needs to be strengthened for a future vision.

2. Land Use Tracking Capability

Over the past three years, EQAC has recommended that the county upgrade or replace the Urban Development Information System (UDIS). Working with staff to better understand the situation, we are expanding the scope of this recommendation, and now urge the county to develop a capability to track the full lifecycle of each land parcel in the county. This capability should be leveraged by all county business functions. It will require the integration of multiple disparate databases that contain parcel information across county departments.

The ability to capture and share parcel information will improve the county's ability to:

- Evaluate planning issues and development options, account for Comprehensive Plan changes, and capture real time plan changes
- Facilitate public safety and plan for emergency preparedness
- Forecast future growth
- Understand and analyze land use at a finer resolution and provide information on mixed use
- Evaluate the environmental effect of each parcel and provide data necessary for modeling and understanding the cumulative effect of development

The integration of data across functional areas should take advantage of current technologies including GIS that allow information from disparate databases to be combined and analyzed by users from many different business functions. Consideration also should be given to making parcel "life-cycle" information available to citizens and businesses in electronic formats that would allow them to understand and use this information.

3. Land Use and Transportation Planning

a. EQAC recommends that the Board of Supervisors and the county's Department of Planning and Zoning continue to consider land use and transportation together when revising the Comprehensive Plan.

b. EQAC recommends that the county identify and collect data on a parcel level that allows analysis of the parcel effect on environmental quality. Potential information includes impervious surface area, tree coverage, and existing and planned use and development intensity.

c. EQAC recommends that the county develop models that allow analysis of the macro effects of land use and transportation decisions. These models should highlight congestion, air quality, commuting patterns, and health effects for use in future decisions. Such information is necessary as the county becomes more complex and densely developed. The county should also require Transportation Demand Management studies and plans for significant new development projects.

d. EQAC recommends that the county adopt new standards and ordinances to support Low Impact Development (LID) as part of the Public Facilities Manual. The county should also adopt ordinances, incentives, and proffers that encourage Green Building.

4. Teleworking

a. EQAC commends the Board of Supervisors for actively supporting teleworking among the county staff. We are encouraged that the county is steadily increasing participation toward twenty percent. We urge that the Board continue to aggressively support the program.

b. EQAC commends the Board of Supervisors for maintaining its leadership role in improving the environment through greater use of teleworking by establishing an aggressive program directed at encouraging employers in the county to adopt or expand telework opportunities.

c. EQAC recommends that the Board of Supervisors work with the Federal government to encourage an increase in teleworking. Further, we recommend the Board of Supervisors work closely with the Virginia Congressional Delegation to secure resources to establish teleworking sites within the county.

5. Transportation

a. EQAC commends the Board of Supervisors for improving the funding for the Non-Motorized Transportation (Trails) Committee. EQAC recommends that the Board continue to provide regular funding to this Committee to implement those projects that have the greatest potential for increasing non-motorized methods of transportation within the county and reducing hazards to pedestrian traffic.

b. EQAC recommends that the county focus on improving transit utilization through a systematic plan that focus on multiple options within a community. For example, the Virginia Railway Express (VRE) Burke EZ Bus provides a convenient alternative to commuting to the Burke VRE station. This can be combined with pedestrian improvements, more connector bus options, and biking trails that together provide a diverse transportation plan.

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An excellent bibliography of additional resource materials on the land use and transportation can be found at www.washingtonregion.net/html/furtherreading.html